# Faithful Patients: The Effect of Long-Term Physician–Patient Relationships on the Costs and Use of Health Care by Older Americans

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## ABSTRACT

*Objectives.* This study examined the impact of duration of physician–patient ties on the processes and costs of medical care.

*Methods.* The analyses used a nationally representative sample of Americans 65 years old or older who participated in the Medicare Current Beneficiary Survey in 1991 and had a usual source of care.

*Results.* Older Americans have long-standing ties with their physicians; among those with a usual source of care, 35.8% had ties enduring 10 years or more. Longer ties were associated with a decreased likelihood of hospitalization and lower costs. Compared with patients with a tie of 1 year or less, patients with ties of 10 years or more incurred $316.78 less in Part B Medicare costs, after adjustment for key demographic and health characteristics. However, substantial impacts on the use of selected preventive care services and the adoption of certain healthy behaviors were not observed.

*Conclusions.* This preliminary study suggests that long-standing physician–patient ties foster less expensive, less intensive medical care. Further studies are needed to confirm these findings and to understand how duration of tie influences the processes and outcomes of care. (*Am J Public Health.* 1996;86:1742–1747)


## *Introduction*

It is widely believed that long-term, sustained physician–patient relationships are vital to good primary health care and that they promote satisfaction, effectiveness, and a reduction in costs.[1] Leaders in US medical education regard the development of such long-term, or "longitudinal," physician–patient relationships as "an essential element of good primary care"[2] and "the defining experience of generalist practice."[3] Such relationships are thought to increase in value as

> the practitioners come to know patients over time, and patients come to know the practitioners. The benefits of this knowledge [can] be expected to accrue in a variety of ways. For example, patients should make fewer visits because many problems can be managed on the phone. Fewer hospitalizations should also result, since practitioners are more likely to be able to ascertain whether or not the problem [can] be managed at home.[1(pp41–42)]

Similarly,

> it ... takes time for physicians to understand and empathize with patients' values and feelings and to be able to help patients identify and utilize health care services that are appropriate for their condition and life situation.... Decisions to adopt healthy habits, to stop smoking to spare a child from passive smoke ... are more likely to be made if recommended by a trusted physician in the context of an ongoing relationship.[4(pp324–325)]

Despite a consensus that longitudinal care is important, remarkably little is known about the actual value—in terms of health care processes, outcomes, or costs—of long-term provider–patient relationships. There is a large body of literature contrasting the experiences of those with and without a "usual source of care," but there is little consideration in this work of the importance of the duration of tie to that usual source. Information relevant to this topic can be found in the literature exploring the value of "continuity of care." However, as has been emphasized by Starfield,[2] this literature has been plagued by definitional inconsistencies, including a failure to distinguish between coordinated follow-up for specific health problems and the maintenance of enduring patient–provider relationships over a period of time. Furthermore, with few exceptions,[5–7] these studies have examined the impact of ties extending over a relatively short duration—usually a year or less—and have drawn on the experiences of relatively small numbers of patients in just one or two clinical sites. Still, this literature suggests several benefits of sustained relationships, including greater satisfaction among patients,[5,7–14] physicians, and other staff[10]; fewer and/or shorter hospitalizations[5]; fewer broken appointments[10]; decreased use of laboratory tests[6]; and decreased use of emergency rooms for care.[7] In addition, increased patient disclosure of personal problems[10] and better compliance with physician instructions have been reported.[8]

With the growth of managed care, many working Americans have severed established relationships with their physicians in order to seek new providers who

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participate in panels offered by employer-sponsored health insurance programs. A 1994 survey found that, among health maintenance organization (HMO) members, 41% had switched physicians when they joined their HMO.[15] If Medicaid and Medicare managed care grow as projected, low-income and older Americans will soon face similar prospects. In the context of these pervasive changes, an investigation into the value of enduring physician–patient relationships assumes particular importance.

The exploratory study reported here—based on a publicly available database reflecting the experiences of a large, nationally representative sample of older Americans—sought to quantify the benefits of long-standing doctor–patient relationships under present Medicare fee-for-service arrangements. We explored four hypotheses, anticipating a "dose–response" monotonic relationship for each. We hypothesized that a longer duration of tie would be associated with (1) greater use of preventive care services (greater use of influenza vaccine and mammography), (2) more healthy behaviors (less obesity, more smoking cessation), (3) more efficient use of health care services (relatively fewer doctor visits and hospitalizations) and a decrease in "inappropriate" service use (less use of hospital emergency rooms), and (4) decreased costs of care (lower total annual Medicare Part A and Part B reimbursements).

## Methods

### The Sample

This report is based on a nationally representative sample of enrollees in the US Medicare program, all of whom participated in the Medicare Current Beneficiary Survey.[16] This face-to-face survey of Medicare beneficiaries was sponsored during the last 4 months of 1991 by the Health Care Financing Administration (HCFA). The analyses reported here are based on an electronic database linking survey responses to Medicare bills for 1991.[16]

Participants were selected by means of a cluster sampling strategy in which 107 primary sampling units were identified throughout the United States and Puerto Rico. The rate of response to the survey was 83.3%, yielding a sample of 12 677 individuals; detailed analyses of the propensity to respond[17] and a description of the strategy to weight observations for nonresponse appear elsewhere.[18] Individuals were eligible for inclusion in the present study if they were 65 years of age or older and were not institutionalized at the time of the survey; 9475 of the 12 677 respondents satisfied these criteria and were potentially eligible to participate. Because the focus of the study was the effect of varying durations of physician–patient tie, the relatively few subjects who did not have such a tie, and therefore were not classifiable on the independent variable, were excluded (n = 817; these individuals are described in greater detail in the Results section), as were a small number (n = 18) who were unable to recall the duration of tie with their provider. Finally, individuals were excluded if they did not elect to purchase Medicare Part B coverage throughout the year, if they were members of a Medicare-qualified HMO, or if they died before January 1, 1992 (because, in each case, Medicare billing data might not reflect use of services for a full year). This left an analytic sample of 8068 individuals (85.2% of the potentially eligible participants). Of this total, 7362 (91.2%) personally responded to the survey questions; 706 responded through a proxy, generally a family member.

### Measures

*Usual provider and duration of tie.* In the course of the survey, all respondents were asked, "Is there a particular medical person or clinic you usually go to when you are sick or for advice about your health?" Those who responded no were asked a series of follow-up questions to determine why they had no regular provider. Those who responded yes were asked, "How long have you been (seeing [name of doctor]/going to [name of place])?" Response options included less than a year, 1 year to less than 3 years, 3 years to less than 5 years, 5 years to less than 10 years, and 10 years or more. Those reporting seeing their usual provider for less than a year were asked a series of follow-up questions about why they had recently switched providers.

*Health care use, healthy behaviors, and costs of care.* Preventive care service use was ascertained from responses to two questions: "Did you have a flu shot last winter?" and "Have you had a mammogram or breast x-ray in the last year?" The latter question was asked only of female respondents. The small number of individuals who responded "don't know" or refused to answer a question were assigned a negative response for that item.

Smoking status was determined through interview responses to the following questions: "Have you ever smoked cigarettes, cigars, or pipe tobacco?" and if yes, "Do you smoke now?" All data derived from the smoking status item were based on patients answering the first question in the affirmative (the "at-risk" denominator). Calculations of body mass index (weight in kilograms/height in meters squared)[19] were based on interview responses to questions regarding height and weight. Men and women in the highest gender-specific 15% were considered obese.

Use of emergency room services was ascertained by the presence of HCFA revenue center codes 450 and 459 in outpatient hospital bills. Since there is no current procedural terminology (CPT) code for a visit to a physician, we adapted a method suggested by Weiner and his colleagues[20] to identify face-to-face physician–patient encounters based on the presence of certain "evaluation and management" CPT 4 codes (for a list of the pertinent codes, see reference 20, page 17). Each face-to-face physician–patient encounter that occurred during the period January 1, 1991, to December 31, 1991, and represented a unique date (or dates) of service was counted as a visit. Hospitalizations were identified from bills generated by acute care hospitals during the same period. Total Part A and Part B reimbursements were obtained from HCFA administrative files.

*Sociodemographic and health status measures.* Information on subjects' age, sex, income, education, health status, living arrangements, insurance status, and marital status was derived from survey responses. Health status was ascertained on the basis of responses to the question "In general, compared to other people your age, would you say that your health is excellent, very good, good, fair, or poor?" Income reflected self-reported pretax income, including the cash value of food stamps. Place of residence (metropolitan or nonmetropolitan) was assigned according to whether or not the person resided in a postal zip code zone lying within a metropolitan statistical area. Subjects with missing values on any of these parameters were excluded from multivariate analyses.

### Analytic Approach

The sample was characterized with respect to duration of tie, and frequencies were computed for each duration-of-tie group (less than 1 year, 1 to 3 years, 3 to 5 years, 5 to 10 years, greater than 10 years) by the various sociodemographic and clinical characteristics described earlier.

**TABLE 1—Sociodemographic and Clinical Characteristics of Medicare Beneficiaries (n = 8068), by the Duration of Their Tie to a Usual Source of Care**

| | Duration of Tie to Usual Source of Care, y, % | | | | |
|---|---|---|---|---|---|
| | <1 | 1–3 | 3–5 | 5–10 | 10+ |
| Age, y | | | | | |
| 65–69 | 11.8 | 19.8 | 15.5 | 20.1 | 32.9 |
| 70–74 | 9.8 | 17.6 | 15.9 | 19.3 | 37.4 |
| 75–79 | 9.7 | 18.7 | 14.9 | 19.4 | 37.3 |
| 80–84 | 10.1 | 19.3 | 17.5 | 20.9 | 32.4 |
| 85+ | 10.7 | 19.1 | 16.6 | 20.3 | 33.4 |
| Race | | | | | |
| Black | 12.2 | 24.8 | 16.4 | 16.4 | 30.1* |
| White | 10.2 | 18.1 | 15.7 | 20.2 | 35.8 |
| Other/unknown | 15.5 | 25.4 | 18.7 | 16.0 | 24.4 |
| Sex | | | | | |
| Male | 10.1 | 18.2 | 15.4 | 19.4 | 36.9 |
| Female | 10.7 | 19.2 | 16.1 | 20.1 | 33.9 |
| Income | | | | | |
| $25 000 or less | 12.2 | 20.0 | 15.5 | 19.8 | 32.5* |
| More than $25 000 | 9.7 | 18.9 | 15.8 | 19.7 | 36.1 |
| Education | | | | | |
| Grade school, some or all | 35.2 | 32.0 | 29.5 | 29.6 | 27.7* |
| High school, some or all | 42.7 | 45.0 | 45.3 | 45.4 | 46.8 |
| Beyond high school | 9.9 | 17.5 | 16.3 | 20.2 | 36.1 |
| Insurance | | | | | |
| Medicare only | 12.8 | 20.8 | 17.0 | 18.2 | 31.3* |
| Medicaid/public | 12.7 | 22.5 | 16.8 | 20.8 | 27.2 |
| Private, employer purchased | 10.1 | 17.4 | 15.5 | 19.2 | 37.8 |
| Private, self-purchased | 9.8 | 18.7 | 15.7 | 20.4 | 35.5 |
| General health | | | | | |
| Excellent | 10.8 | 17.0 | 15.6 | 18.7 | 37.8* |
| Very good | 9.5 | 19.7 | 14.9 | 19.9 | 36.0 |
| Good | 9.8 | 17.4 | 16.5 | 19.5 | 36.9 |
| Fair | 11.2 | 20.6 | 16.3 | 21.0 | 31.0 |
| Poor | 13.3 | 10.9 | 16.1 | 20.1 | 29.5 |
| Lives alone | | | | | |
| No | 10.5 | 18.0 | 15.8 | 20.0 | 35.6 |
| Yes | 10.4 | 20.5 | 15.9 | 19.4 | 33.8 |
| Marital status | | | | | |
| Married | 10.0 | 17.6 | 15.6 | 20.2 | 36.6* |
| Widowed | 10.5 | 20.0 | 16.2 | 19.1 | 34.2 |
| Divorced | 15.9 | 20.6 | 18.0 | 19.4 | 26.2 |
| Separated | 13.5 | 33.8 | 12.8 | 20.6 | 19.3 |
| Never married | 9.5 | 18.9 | 14.3 | 21.5 | 35.7 |
| Residence | | | | | |
| Nonmetropolitan | 10.7 | 18.9 | 15.6 | 20.4 | 34.5 |
| Metropolitan | 10.0 | 17.9 | 16.1 | 18.2 | 37.8 |

*$P < .05$ (chi-square analysis of the overall association between this patient characteristic and the duration of tie to usual source of care).

Chi-square tests were used to assess the independence of each characteristic and duration-of-tie group. The independence of duration-of-tie group from each of the outcome variables was then explored through chi-square tests for discrete variables (use of preventive care services, healthy behaviors, any emergency room use, any hospitalizations) and analysis of variance for continuous variables (total Part A reimbursement, total Part B reimbursement, and number of office visits). Separate analyses considered the sample as a whole and subjects reporting "poor" health (n = 705), since it has been suggested that sicker patients may benefit more from consistent ties with providers.[14]

Several approaches were used in exploring the data for evidence of the hypothesized trends. First, for each outcome, simultaneous (Bonferroni-corrected[21]) confidence intervals, set at a combined alpha level of .05, were computed for proportions and means for each duration-of-tie interval. Second, formal statistical tests of trend were performed. Multivariate tests of simple monotonic trends were implemented through analyses in which sociodemographic and clinical covariates were entered simultaneously into a basic (reduced) model, followed by the entry of a duration-of-tie variable coded as follows: −2 (less than a year), −1 (1 to 3 years), 0 (3 to 5 years), 1 (5 to 10 years), or 2 (greater than 10 years). Logistic regression was used in multivariate trend tests for dichotomous outcomes (influenza vaccine, mammography, current smoker, obesity, emergency room use, and hospital use); ordinary least squares procedures were used for analogous tests of continuous outcomes (Part A and Part B reimbursement, number of office visits). For logistic regression analyses, the likelihood ratio test[22] was used to assess the statistical significance of the addition of the recoded duration-of-tie variable; for ordinary least squares analyses, an F test was used.

The magnitude and variability of effects for each individual duration-of-tie interval for each outcome were explored in multivariate analyses in which sociodemographic and clinical covariates were entered simultaneously along with four dummy variables representing each duration-of-tie group, with the shortest duration (less than 1 year) being the "left out" group. Finally, the data were explored post hoc for evidence of threshold effects by dichotomizing the sample at each duration-of-tie time interval and performing simple bivariate tests of association (for instance, examining the proportion attaining each outcome in patients with ties of less than 3 years vs those with ties of 3 years or more).

For all analyses, SUDAAN software was used to take into account both the oversampling and the cluster sampling strategy adopted in the selection of individuals to participate in the Medicare Current Beneficiary Survey.[23,24]

## Results

### *Duration of Tie and Sociodemographic Characteristics*

Among older Medicare beneficiaries with a usual source of care in 1991, 10.5% had a tie with their physician lasting less than 1 year, 18.7% had a tie lasting 1 to 3 years, 15.5% had a tie lasting 3 to 5 years, 19.6% had a tie lasting 5 to 10 years, and 35.8% had a tie lasting 10 years or more.

Relationships between duration of tie and various sociodemographic and clinical characteristics appear in Table 1. As compared with respondents who had been seeing their providers for shorter periods of time, those with long-standing ties were slightly more likely to be White, to have a relatively high income, to be better educated, and to be in better health. They were also more likely to have either employer-sponsored or self-purchased health insurance in addition to their regular Medicare coverage.

### *Duration of Tie and Service Use, Healthy Behaviors, and Cost*

Bivariate relationships between duration of tie and the use of preventive services, healthy behaviors, emergency room and hospitalization, number of doctor visits, and health care costs for the entire sample and for subjects in "poor health" are displayed in Table 2. For the sample as a whole, duration of tie was associated with having had an influenza vaccine the previous winter and with having been hospitalized; it was also associated with Part A reimbursement, number of office visits, and Part B reimbursement. Values for each of these measures at the extremes of duration of tie (i.e., ties lasting less than 1 year and 10+ years) were as follows: influenza vaccine, 38.5% and 47.2%; any hospitalization, 21.3% and 15.1%; Part A reimbursement, $2140 and $1233; Part B reimbursement, $1458 and $1018; and mean number of office visits, 6.12 and 5.59. Bonferroni-corrected confidence intervals were non-overlapping at the extremes for any hospitalization, Part A reimbursement, and Part B reimbursement. There were no associations between duration of tie and mammography use, healthy behaviors, or the probability of emergency room use in bivariate analyses. Subjects reporting poor health showed no evidence of a greater benefit from enduring ties than did the sample as a whole (Table 2).

Consistent with the bivariate tests of association, multivariate trend tests using the recoded duration-of-tie variable were statistically significant in the hypothesized direction for influenza vaccine, probability of hospitalization, Part A reimbursement, number of office visits, and Part B reimbursement; these trends persisted when patients having extremely high costs of care were eliminated from each duration-of-tie group by trimming group outliers at greater than three standard deviations above the mean (data not shown).

**TABLE 2—Health Care Utilization, Health Behaviors, and Health Care Costs of All Subjects and Those in Poor Health, by the Duration of Their Tie to a Usual Source of Care**

| Outcome Measure | Duration of Tie to Usual Source of Care, y | | | | |
|---|---|---|---|---|---|
| | <1 | 1–3 | 3–5 | 5–10 | 10+ |
| Had influenza vaccine previous winter, % | | | | | |
| All subjects | 38.5 | 40.6 | 46.0 | 44.7 | 47.2* |
| Subjects in poor health | 37.2 | 46.1 | 44.5 | 46.0 | 48.2 |
| Had a mammogram during the previous year, % of females | | | | | |
| All subjects | 37.6 | 37.8 | 39.2 | 39.5 | 37.7 |
| Subjects in poor health | 32.1 | 28.4 | 32.0 | 32.0 | 29.6 |
| Smoke now, % of ever smoked | | | | | |
| All subjects | 27.0 | 27.9 | 27.5 | 23.7 | 25.6 |
| Subjects in poor health | 28.3 | 27.4 | 33.0 | 23.1 | 26.6 |
| Obese, % | | | | | |
| All subjects | 16.3 | 16.9 | 17.2 | 18.1 | 16.1 |
| Subjects in poor health | 22.6 | 25.1 | 16.6 | 26.5 | 22.6 |
| Used emergency room during the previous year, % | | | | | |
| All subjects | 16.1 | 13.1 | 12.1 | 11.6 | 11.9 |
| Subjects in poor health | 23.0 | 22.1 | 26.4 | 22.5 | 21.5 |
| Any hospital admissions, % | | | | | |
| All subjects | 21.3 | 17.3 | 19.3 | 18.6 | 15.1* |
| Subjects in poor health | 46.4 | 36.8 | 41.0 | 36.2 | 33.1 |
| Mean Part A reimbursement, $ | | | | | |
| All subjects | 2140 | 1847 | 1686 | 1713 | 1223** |
| Subjects in poor health | 5180 | 4424 | 5910 | 4793 | 3374 |
| Mean Part B reimbursement, $ | | | | | |
| All subjects | 1458 | 1307 | 1254 | 1317 | 1018** |
| Subjects in poor health | 2703 | 2889 | 3044 | 2852 | 2044 |
| Mean no. office visits | | | | | |
| All subjects | 6.12 | 6.09 | 5.76 | 5.89 | 5.59** |
| Subjects in poor health | 8.59 | 8.89 | 8.05 | 9.95 | 7.75 |

*$P < .05$ (chi-square analysis of the overall association between this outcome measure and the duration of tie to usual source of care).
**$P < .05$ (ANOVA examining the overall association between this outcome measure and the duration of tie to usual source of care).

Examination of the point estimates and tests of statistical significance for the duration-of-tie dummy variables failed to suggest a strong or consistent "dose–response" relationship between duration of tie and any of the outcomes measured (Table 3). However, it is noteworthy that, in these multivariate analyses, patients with ties of long duration (10+ years) had substantially lower costs of care ($495.61 less in Part A reimbursement costs, 95% confidence interval [CI] = $81.31, $909.91; $316.78 less in Part B reimbursement costs, 95% CI = $117.07, $516.48) than their counterparts with ties of short duration (less than 1 year). Relative to the same group, odds of being hospitalized among patients with ties of long duration were 0.71 times as great (95% CI = 0.56, 0.89; all confidence intervals reflect two-group comparisons). These are our best estimates of the impact of very long-standing ties after adjusting for measured demographic and health characteristics.

While we initially posed our hypotheses in terms of simple monotonic trends, we elected to perform post hoc analyses in order to explore the data for evidence of threshold effects of duration of tie. Consistent with a monotonic trend rather than a threshold relationship, when the cost outcomes were dichotomized at each duration-of-tie interval, bivariate tests of association were positive no matter where the threshold was specified (i.e. no matter where the sample was dichotomized; data not shown).

### *Responses to Follow-Up Questions*

*Why no usual source of care?* The 817 individuals reporting that they had no usual source of care were asked follow-up

**TABLE 3—Multivariate Estimates of the Effect of Duration of Tie for Each Interval**

| | Duration of Tie, y | | | |
|---|---|---|---|---|
| | 1–3 | 3–5 | 5–10 | 10+ |
| **Dichotomous outcome, odds ratio (*P*)** | | | | |
| Influenza vaccine | 1.03 (.81) | 1.19 (.15) | 1.10 (.36) | 1.26 (.02) |
| Mammogram | 0.87 (.26) | 1.03 (.80) | 0.98 (.88) | 0.90 (.38) |
| Smoke now | 0.85 (.30) | 1.08 (.62) | 0.95 (.75) | 1.08 (.75) |
| Body mass index | 0.96 (.82) | 1.13 (.44) | 1.18 (.29) | 1.05 (.77) |
| Used emergency room | 0.73 (.03) | 0.72 (.02) | 0.71 (.03) | 0.81 (.13) |
| Any hospital admissions | 0.76 (.06) | 0.88 (.35) | 0.86 (.19) | 0.71 (.00) |
| **Continuous outcome, difference in dependent variable (*P*)** | | | | |
| Part A reimbursement | −20.01 (.94) | −316.27 (.18) | −179.97 (.45) | −495.61 (.02) |
| Part B reimbursement | −141.21 (.20) | −244.95 (.03) | −136.89 (.22) | −316.78 (.00) |
| No. office visits | −0.40 (.16) | −0.62 (.03) | −0.46 (.13) | −0.54 (.03) |

*Note.* For dichotomous outcomes, effects are expressed as odds ratios; for continuous outcomes, effects are expressed as differences in outcomes. In both cases, the "left out" comparison group is patients with a duration of tie of less than 1 year (see text for details of analyses).

questions to ascertain their reasons. Multiple responses were allowed, and the pattern of responses suggested that the vast majority of older people with no usual source of care had none by choice. The majority (72.6%) said that they had no usual source of care because they were seldom or never sick. Others (21.5%) cited the expense of medical care as a reason for not having a regular provider. Also important was the unavailability of the person who had been their regular provider (15.6%). The subgroup of patients reporting access-type problems was too small to analyze.

*Type and place of usual provider.* Individuals with a usual source of care were asked what "kind of place" they went to for their care. The majority (78.7%) reported using a physician's office or group practice as their usual source of care. Most others used a clinic or hospital outpatient department; 81.1% of these individuals reported usually seeing one particular physician at that site.

*Why a recent change in provider?* The 251 individuals reporting that they had been seeing their usual provider for 1 year or less were asked several questions regarding their change of physician. The overwhelming majority (81.8%) had previously been seeing another physician; 13.1% of these individuals were still seeing their previous provider, although no longer as their primary source of care. Most of those who had changed providers (63.7%) did so as a result of life changes affecting access (i.e., the physician's relocation, retirement, or death, or the relocation of the patient). Dissatisfaction served as an incentive to change for a small but significant portion (19.6%) of this subset of 251 respondents; the most common reasons for dissatisfaction with a provider were "attitude or personality" (28.7%) and ineffectiveness of treatment (24.3%).

## *Discussion*

In this nationally representative study, we found that most older Americans are remarkably faithful patients: 55.3% reported having a tie to their physician of more than 5 years, and 35.8% reported a tie dating back 10 years or more. While we found that a longer duration of tie was associated with substantially lower costs of inpatient and outpatient care and with a lower risk of hospitalizations, we did not find an overall strong positive relationship between duration of tie and use of preventive services, engagement in selected healthy behaviors, or decreased use of the emergency room.

Our finding of an association between lower costs and ties of longer duration might seem at odds with prior studies showing that people in better health and with a history of lower health service use are more likely to switch from the fee-for-service sector to join an HMO.[25] In our nationally representative sample of older Americans in the fee-for-service sector, there was no suggestion that relatively healthy patients switch providers more frequently; on the contrary, in our sample, relatively good health was associated with ties of longer duration (Table 1). This may reflect a number of factors, including better health outcomes associated with longer standing ties and a tendency on the part of patients to switch physicians at the onset of a serious illness.

This brings up a major limitation of the study. Subjects were not experimentally assigned to any particular duration of tie and were presumably relatively free to switch providers when they chose to do so. The extent to which selection might explain the observed favorable impact of duration of tie cannot be resolved within the current data. Survey responses by recent provider switchers suggest that such selection was relatively unimportant (since physician relocation, retirement, or death and patient relocation were most frequently cited as reasons for recent switches). However, as just noted, it is plausible that patients were more likely to switch physicians at the onset of a new illness, resulting in apparently higher costs of care and higher hospitalization rates for patients with shorter ties. We attempted to minimize the impact of selection in several ways in our analyses: by confining the analyses to patients in poor health, by conducting trend tests with costly outliers trimmed, and by performing multivariate analyses to statistically control for confounders, including health status, that might have been correlated with the propensity to switch doctors. In each case, the pattern of results with respect to costs continued to hold, although effects failed to reach statistical significance in the relatively small poor-health subgroup. Clearly, the issue of selection can be more rigorously addressed through stronger study designs. For better or for worse, there are likely to be numerous such "natural experiments" in the coming months, as large numbers of Americans break ties with their providers in order to join managed care systems. In joining these systems, some will break ties of short duration, others will break long-standing ties, and still others will not have had a prior tie at all. The findings presented here suggest that the cost of provider switching may vary as a function of prior duration of tie.

A second major limitation of the study is its reliance on previously collected data. We could not quantify many potential benefits in the process of care (e.g., compliance with medications) or outcomes (e.g., the recognition and treatment of depression) that may well accrue from physician–patient ties of longer duration. Some of the measures that were available (e.g., maintaining appropriate

weight and stopping smoking) are relatively insensitive to providers' efforts to intervene.[26–29] Other measures (e.g., use of preventive care services) are sensitive to providers' suggestions, but rates may be more reflective of individual physician practice style than of duration of tie. It is also worth noting that many of our measures—including the main measure of interest, duration of tie—were based on self-report. Unfortunately, responses in the Medicare Current Beneficiary Survey, like data derived from other often-used nationally representative health surveys, were not subject to validation. It is also important to note that all of the measures are subject to a significant interpretational limitation, in that we do not have information on the proportion of total care attributable to each "usual" provider vs some other practitioner.[30] Finally, we were unable to reliably ascertain whether usual providers were generalist or specialist physicians. Had we been able to do so, we might have been better able to account for the observed variation in practice styles.

Patients without a usual source of care were excluded from the study because they could not be classified on the independent variable of interest. While they constitute a relatively small proportion of older Americans (in our sample, 8.6% of community-dwelling people 65 years of age and older), they represent a group of substantial policy interest. Auxiliary analyses showed that they are relatively low users of care (mean Part A expenditures of $783 and mean Part B expenditures of $597), that they are relatively healthy, and that they are slightly more likely to have lower incomes and to be younger, male, and members of minority groups (data not shown). Patients who died during the year were also excluded. As expected, this small group (n = 82) had a high cost of care (mean Part A expenditures of $11 611). However, evidence was lacking for a relationship between duration of tie and cost of care in this small sample (data not shown). While long-standing ties might be expected to influence treatment decisions at the time of death, this important issue remains to be explored.

The American medical care landscape is changing rapidly. While the solo practitioner is disappearing, it does not necessarily follow that enduring doctor–patient relationships are a phenomenon of the past. Multispecialty group practices and managed care plans can be organized to promote or discourage enduring ties, depending on managerial policy. Public policy can also promote enduring ties if those ties are valued. For example, legislation mandating that individuals be permitted to retain their insurance coverage when they change jobs will preserve and promote long-standing ties. "Any willing provider" legislation is likely to have a similar effect. However, all such policies have costs. In view of the current restructuring of American medical care, it seems critical to further explore and define the value of long-standing provider–patient relationships. □

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